2021-IP20 – Role of Greenhouse Gas Removals (GGRs) in the UK's 'Net Zero Strategy: Building Back Greener'

On 19 October 2021, the UK Government released its 'Net Zero Strategy', which sets out policies and proposals for decarbonising all sectors of the UK economy to meet net zero by 2050. Alongside, the UK Government also published its response to its 'Call for Evidence' on GGRs from December 2020 (IEAGHG submitted a response focussed on the technical aspects of GGRs), as well as a couple of supporting reports (links to all documents at the end). The strategy sets out clear policies and proposals for keeping the UK on track for its coming carbon budgets, Nationally Determined Contribution (NDC), and then sets out a vision for a decarbonised economy in 2050, covering emissions reductions in each sector of the UK's economy as well as GGRs for addressing any remaining emissions from hard-to-abate sectors.

The key commitments and messages in terms of GGRs are the following:

- Deploy at least 5 $MtCO_2$/year of engineered GGRs by 2030, in line with Climate Change Committee (CCC) and National Infrastructure Commission (NIC) assessments. This is expected to increase to 23 $MtCO_2$/year in 2035 and 75-81 $MtCO_2$/year in 2050 (52-58 $MtCO_2$ from Bioenergy with Carbon Capture and Storage (BECCS), 18-29 $MtCO_2$ from Direct Air Carbon Capture and Storage (DACCS)).
- By 2030, there will be significant deployment of mature BECCS technologies and commercial scale deployment of DACCS. By the early 2030s the portfolio of GGRs deployed at scale will expand as technologies mature and demand from end-use sectors increases.
- Develop markets and incentives for investment in GGRs by consulting on preferred business models to attract private investment in 2022 and launch a 'Call for Evidence' to explore the role of the UK Emissions Trading Scheme (UK ETS) as a potential long-term market for GGRs. There is potential for early support instruments to integrate with market-based approaches, such as combining contract mechanisms with inclusion of GGRs in the UK ETS.
- Explore options for regulatory oversight to provide robust monitoring, reporting and verification (MRV) of GGRs. This work will be informed by the recommendations of the MRV Task and Finish Group convened by BEIS and its initial report (IEAGHG was a member of this group). Topics of importance are:
    - Permanence/durability of GGRs,
    - Need for an independent audit function to be responsible for a MRV regime,
    - Accounting for emissions associated with international supply chains, and
    - Accounting for possible re-emissions.
- Ensure that GGRs result in a permanent net reduction in atmospheric carbon. This is a complex task which, at least in the near-term, may require case-by-case scrutiny of the carbon intensity of GGR supply chains and long-term indirect emissions of GGR projects (this is highly linked with the previous point).
- Deliver £100 million innovation funding for DACCS and other GGRs. The programme's pilot projects could remove between 100 and 1,000 tonnes of CO_2e/year in 2025 and have the potential to scale up to millions of tonnes by the 2030s. UK Research and Innovation (UKRI) will invest £31.5 million in five land based GGR demonstrator projects and a central hub.
- Seek an amendment to the Climate Change Act 2008 to enable engineered removals to contribute to UK carbon budgets. Currently, only removals from Land Use, Land Use Change and Forestry (LULUCF) are recognised.
- GGRs must not be pursued as a substitute for decisive action across the economy to reduce emissions.

- GGRs have resource requirements that will impact other sectors, thus GGR business models will need to consider interactions with Industrial Carbon Capture and hydrogen business models, along with wider carbon pricing policy.
- The upcoming Biomass Strategy (due to publish in 2022) will review the amount of sustainable biomass available to the UK and set out a framework for how this resource can be best utilised across the economy to help achieve net zero.
- GGR technologies must not create new environmental risks. E.g., feedstock production for BECCS, biochar and wood in construction have potentially significant land requirements which if mismanaged could pose risks to biodiversity. The deployment of BECCS could also potentially impact local air quality and regulations need to reflect this.
- By the early 2030s, CO_2 transport and storage (T&S) infrastructure availability could potentially constrain GGR deployment, as the significant overall expansion of CCUS projects creates competition.
- To achieve the level of negative emissions indicated by the central delivery pathway to 2037 and for net zero, additional public and private investment of around £20 billion is needed.
- There will also be a consultation on business models for engineered GGRs in Spring 2022.

In conclusion, the 'Net Zero Strategy' provides an ambitious and detailed (380+ pages) pathway for the UK to reach net zero by 2050. Especially the specifically spelled out commitments for GGR deployment are a positive surprise and can be expected to set a high benchmark for other countries ahead of COP26.

Reference list

Net Zero Strategy: Building Back Greener:

https://www.gov.uk/government/publications/net-zero-strategy

Consultation outcome: Greenhouse gas removals: call for evidence

https://www.gov.uk/government/consultations/greenhouse-gas-removals-call-for-evidence

Greenhouse gas removal methods: technology assessment report:

https://www.gov.uk/government/publications/greenhouse-gas-removal-methods-technology-assessment-report

Investable commercial frameworks for 'power-BECCS':

https://www.gov.uk/government/publications/investable-commercial-frameworks-for-power-beccs

Monitoring, reporting and verification of greenhouse gas removals (GGRs): Task and Finish Group report:

https://www.gov.uk/government/publications/monitoring-reporting-and-verification-of-ggrs-task-and-finish-group-report

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